

REMARKS

Claims 8-11, 16-19, 22, 23, 26 and 27 stand rejected under 35 U.S.C. §102(b) as being anticipated by Tuttle et al. Claims 12-14, 20, 21, 24, 25, and 28-36 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tuttle et al in view of Perholtz et al. The Examiner's consideration of the present application is most appreciated. In view of the present amendment and following remarks, the Examiner is respectfully requested to reconsider the outstanding rejection and allow the present application to issue.

Interview Summary

Examiner Heffington is thanked for the personal interviews throughout this examination, including those granted March 22 and May 4, 2010. The Interview Summaries provided by Sara England in regard thereto are accurate and complete. No agreement was reached.

The Present Amendment

By way of the present amendment, the claims now more clearly recite what the applicants regard as the invention. Each of the independent claims have been amended herein to specifically recite searching for an element or entity which may be found at an indeterminate location within the system under test. Support for this language is found on page 8 in lines 17-19, between page 10 line 4 and page 11, line 9, and between page 15, line 4 and page 16, line 10 of the present specification.

Newly added independent claim 38 incorporates language similar to claim 8, with fewer limitations in new claim 38. Newly added claims 40 and 42 incorporate language similar to claim 28, both slightly reworded. Finally, dependent claims 43-77 incorporate features that were discussed in the May 4, 2010 interview as potentially adding novelty to the present invention. The Examiner's consideration of this new claim language is respectfully requested.

In addition, and arising from the foregoing interviews, the independent claims have been amended to recite "automatic", "by a script", and other similar phrases where necessary to clearly

delineate that the present invention is in fact a machine, and not abstract ideas of a person. Support for these phrases may be found, for exemplary purposes, between page 10 line 21 and page 11, line 11.

With regard to discussion of action occurring that changes when found or not found, claim 14 in line 19 has the phrase “result of” inserted, to now read: “said flow which varies responsive to a result of detection”. The remaining claims already incorporated this limitation. In addition, claim 28 has been amended herein at the very end to state: “a first user input command implemented responsive to a detection of said first entity during said image processing step and a second user input command implemented responsive to a non-detection of said first entity during said image processing step.”

Support for the newly added claim language may be found in several places. From page 8, line 14 - page 9, line 1: “More particularly, window 110 provides a command capture interface which most preferably provides a system-under-test (SUT) screen display 114 which provides a visual depiction of the display screen generated by the system for which the operation of the interactive development environment 100 is designed to control. Within that display there will be various graphical representations 116 that may take the form of icons as illustrated, or various buttons, message boxes, prompts or any other graphical image or control. The depiction may be an exact copy of the remote graphical user interface, a resized or scaled version, or may further include various image manipulations such as color conversions or other manipulations as deemed suitable and appropriate for a given application.”

Further support is found on page 10, lines 4 - 15: “Where a single entity is anticipated, the image of the entity can be stored through the command capture interface window 110, and, when such image is later detected during execution of a script, an appropriate action can be selected, such as the “Click” command which would represent a mouse click upon a particular point in the screen. While many times this “Click” command may be executed directly upon the entity which newly appears upon the system-under-test screen 114, the direct action upon such an entity is not required. Instead the user of interactive development environment 100 has complete control over any of the

user actions that may be relayed to the system-under-test 290, such as providing typed text, commands, movement of the mouse, and so forth. Consequently, the appearance of an object may stimulate any suitable action.”

Additional support is found between page 10, line 21 and page 11, line 11: “These image commands will most preferably include screen image searching commands and specific image information. Exemplary of the screen image searching commands are such commands as “WaitFor”, “WaitForAny”, “WaitForAll”, “RefreshScreen”, “ImageFound()”, “AnyImageFound()”, “ImageLocation()”, “AnyImageLocation()”, “EveryImageLocation()”, and other similar commands. A variety of information will most preferably be obtained or obtainable with regard to specific images, through such commands as “ImageInfo()”, “FoundImageNumber()”, “FoundImageName()”, “FoundImageLocation()” “ImageHotSpot()”, and “ImageSize()”. Utilizing the above command set, it is possible to monitor a graphical user interface for any type or shape of image and then, responsive to the presence thereof, select a subsequent user action as though the user action were being performed directly upon the system-under-test 290 rather than from a source or controlling computer. In the event an unexpected event or entity appears upon the screen, the user, through the integrated development environment 100, has the opportunity to control the operation of the local and remote systems responsive thereto.”

From page 14, lines 9-11: “Communications channel 275 will in the preferred embodiment include a keyboard channel 272, mouse channel 274, and a transfer of screen updates from VNC server 280 back to the remote GUI interface 270. Communications channel 275 may be a high speed trunk line or cable, or may alternatively be a relatively slow-speed dial-up or RS-232 type connection. With proper selection of components, the preferred embodiment has much flexibility to operate through diverse communications channels having very different data transfer rates and signal to noise ratios.”

From page 15, lines 1-16: “GUI recognition subsystem 265 dynamically scans the screen image of the remote system-under-test 290 for any bit-map images which the initiate action subsystem 260 is searching for. The goal of GUI recognition subsystem 265 is to locate images and signal the

presence of such images to the initiate action subsystem 260 through an image detection signal, initiate recovery procedures such as moving the mouse cursor to locate images, or to report that the sought-after images are not available. GUI recognition subsystem 265 cooperates with the initiate action subsystem 260 and language extensions processor 255 output to determine whether a desired event or image has been created and if so, to execute the desired image identification actions requested within the language extensions received from language extension processor 255 through the execution environment 245. Initiate action subsystem 260 initiates any action requested by the language extensions received from language extensions processor 255, which could be active commands to type text through the keyboard or to move the mouse in a number of ways. The commands may also in the preferred embodiment include passive commands to search the screen image on a continuing basis for a specific bit-map image, and, for exemplary purposes, terminating the search after a given period of time has elapsed.”

If there remain any specific recitations that the Examiner is uncertain about the support, the applicants and their representative will endeavor to provide specific citations.

Exemplary Specific Novel Features Found in the Present Claim Recitations

The present invention searches the pixel image of a machine under test for “a first graphical element which may be found at an indeterminate location contained within and comprising less than said pixel image” (claim 8, lines 6-9). Similar recitations are found in the remaining independent claims 14, 16, 28, 38, 40, and 42. The individual elements may comprise “icons as illustrated, or various buttons, message boxes, prompts or any other graphical image or control” (Present specification, page 8, lines 17-19). The Webster’s Unabridged definition for “search” is attached herewith for review and consideration by the Examiner. Therein, “search” in verb form is defined as “1. To look over or through, for the purpose of finding something.” As a noun, “search” is defined as “1. An act of searching; scrutiny, inquiry, or examination in an attempt to find something, gain knowledge, etc.” This clearly distinguishes from Tuttle, where a comparison, not a search, is the

only action disclosed.

In addition to this search for the first graphical element, which might be found at different locations upon the graphical user interface, the present invention further recites the step of: “generating a user peripheral input device input action within said second computer system graphical user interface . . . responsive to said receiving and results of said searching steps.” (claim 8, lines 11-16). Similar but alternative language is found in claim 16, lines 11-16, and claim 14, lines 18-24.

Claim 24 additionally recites: “locating a user peripheral input device input action at a location relative to said first entity” (claim 24, lines 3-4). Similar language is found, for example, in claim 29.

As a result of these features, the user does not need to worry where on the screen the image element appears, and can make intelligent decisions about any subsequent actions, including the placement of a mouse click or other similar action relative to the placement of the individual element, and also alternatives that might arise and still be handled to continue the testing.

By being able to search for image elements and make intelligent decisions, a calculator can be tested through all numbers and operations by storing the images for each of the operations and the numbers 0 - 9. For a simple calculator, the operations might be “add”, “subtract”, “multiply”, “divide”, “equals”, and “clear”. Then, using simple “For Next”, “Repeat With”, “Do While” loops or the like, each of the operations may be tested and the results confirmed by saving the images of operations, numerals and any other necessary elements. In the present invention, this for exemplary purposes might be achieved using very simple loops requiring less than forty lines of code. Both the code and the images will take up very little storage space. This is done without concern for where on the screen the calculator might appear. In contrast, Tuttle must actually execute every possible test, and then save the image to compare with future systems. The storage of these Tuttle images will require an impractical amount of time, and an unreasonable amount of storage space. Even the identification of the digits of the most common calculator, an eight digit calculator, would require 100 million Tuttle comparisons to match the digits alone, and, again, any window cascading or repositioning would cause a failure in the Tuttle comparison.

The Tuttle Reference

The Examiner will recognize that Tuttle et al stores a representation of the entire screen, or a predetermined portion of lines or screen width, and then checks during testing to see if the exact pattern reproduces later. Unfortunately, a large number of factors will change between diverse computers that will interfere with this test. Tuttle contemplates some of these factors, such as flashing cursors, and considers cutting off a portion of the screen to remove clocks and the like. However, the Examiner will recognize, for example, that modern windowing programs normally cascade, meaning that when a new window is opened, the new window will be shifted down and to the right from the previous window. So, unless exactly the right number of windows have been opened prior to the start of the Tuttle testing system, Tuttle will reject a perfectly fine operation due to the shifting resulting from cascading windows. In other words, Tuttle only discloses a comparison of screens or screen signatures, without any searching within the screen for elements or entities at indeterminate locations.

In addition, since Tuttle is only able to match a screen for “pass/fail regression testing” (Tuttle Col 14, lines 38-41), there is no opportunity to choose what action to take, depending upon what occurs. Instead, Tuttle must simply halt the program and return an error when a screen image fails to match.

The Examiner will appreciate that Tuttle is consequently limited solely to testing of hardware such as might occur at a manufacturing facility, where every computer is loaded with the same software, and is tested immediately at start-up so that subsequent windows will cascade at the proper location.

Tuttle fails to illustrate or teach the detection of a graphical element as recited, and does not respond to either control execution flow or to control passage of a signal through an i/o channel. The remaining references of record fail to rectify this deficiency of the prior art. Consequently, the anticipation and obviousness are herein traversed, and the Examiner is respectfully requested to withdraw this basis for rejection.

No new matter has been added by way of the present amendments. Consequently, in view

of the present amendment and remarks, the Examiner is respectfully requested to reconsider the rejections of record and allow the present application to issue. The present response is not considered to acquiesce with regard to the novelty of the dependent claims not specifically addressed herein, and should the Examiner need to consider these as well, the Examiner is also respectfully requested to specifically reconsider the novelty found therein in light of the foregoing discussions.

Should there remain any open issues in this application which might be resolved by telephone, the Examiner is respectfully requested to call the undersigned at 320-363-7296 to further discuss the advancement of this application.

Sincerely,

/Albert W. Watkins, reg. 31,676/

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